

CALIFORNIA ENVIRONMENTAL PROTECTION AGENCY  
REGIONAL WATER QUALITY CONTROL BOARD  
CENTRAL VALLEY REGION

AMENDMENTS  
To  
THE WATER QUALITY CONTROL PLAN FOR THE SACRAMENTO  
RIVER AND SAN JOAQUIN RIVER BASINS

FOR  
THE CONTROL PROGRAM FOR FACTORS CONTRIBUTING TO THE  
DISSOLVED OXYGEN IMPAIRMENT IN THE STOCKTON DEEP  
WATER SHIP CHANNEL

DRAFT FINAL STAFF REPORT  
Appendix C  
COMMENTS AND RESPONSES FOR APRIL 2004 DRAFT



*24 May 2004*

## Table of Contents

Introduction .....	3
Comment Letter # 1: Alex Hildebrand, Secretary, South Delta Water Agency .....	5
Comment Letter # 2: Alex Hildebrand, Secretary, South Delta Water Agency .....	6
Comment Letter # 3: Debra C. Liebersbach, P.E., Senior Civil Engineer, Turlock Irrigation District.....	7
Comment Letter # 4: Katherine F. Kelly, Chief Bay-Delta Office, California Department of Water Resources .....	9
Comment Letter # 5: Mark J. Madison, Director of Municipal Utilities, City of Stockton .....	13
Comment Letter # 6: Steve Chedester, Executive Director, San Joaquin River Exchange Contractors Water Authority.....	18
Comment Letter # 7: Tim O’Laughlin, O’Laughlin & Paris LLP, on behalf of the San Joaquin River Group Authority.....	21
Comment Letter # 8: Tim O’Laughlin, O’Laughlin & Paris LLP, on behalf of the San Joaquin River Group Authority.....	22
Comment Letter # 9: LF Ploss, San Joaquin River Group Authority.....	28

## Introduction

A draft staff report, *Amendments to the Water Quality Control Plan for the Sacramento River And San Joaquin River Basins for the Control Program for Factors Contributing to the Dissolved Oxygen Impairment in the Stockton Deep Water Ship Channel, Public Review Draft Staff Report*, was released for public review on 8 April 2004. An informational public workshop was held at the regularly scheduled meeting of the Central Valley Regional Water Quality Control Board (Regional Board) on 23 April 2004. This workshop provided participants with an opportunity to share their views and provide comment on the proposed Basin Plan Amendment and staff report to the Regional Board and staff.

The Board Agenda Package for a Public Workshop on the Development of a Basin Plan Amendment to Establish a Total Maximum Daily Load (TMDL) for Dissolved Oxygen in the San Joaquin River and Notice of Availability and Request for Comments on the Public Review Draft Staff Report for the Control Program for Factors Contributing to the Dissolved Oxygen Impairment in the Stockton Deep Water Ship Channel, dated 8 April 2004, indicated that Regional Board staff would provide written responses to written comments submitted by 14 May 2004.

Nine comment letters, as listed in the following table, were received by 14 May 2004 in response to the solicitation. These comments, and input received from the 12 April 2004 public workshop and the 23 April 2004 Regional Board workshop, were used to prepare the 24 May 2004 Draft Staff Report, *Amendments to the Water Quality Control Plan for the Sacramento River And San Joaquin River Basins for the Control Program for Factors Contributing to the Dissolved Oxygen Impairment in the Stockton Deep Water Ship Channel, Draft Final Staff Report*.

Comment No.	Name	Affiliation	Date Received
1	Alex Hildebrand, Secretary	South Delta Water Agency	21 April 2004
2	Alex Hildebrand, Secretary	South Delta Water Agency	28 April 2004
3	Debra C. Liebersbach, P.E. Senior Civil Engineer		4 May 2004
4	Katherine F. Kelly, Chief Bay-Delta Office	California Department of Water Resources	13 May 2004
5	Mark J. Madison, Director of Municipal Utilities	City of Stockton	14 May 2004
6	Steve Chedester, Executive Director	San Joaquin River Exchange Contractors Water Authority	14 May 2004
7	Tim O'Laughlin	On behalf of the San Joaquin River Group Authority	14 May 2004
8	Tim O'Laughlin	On behalf of the San Joaquin River Group Authority	14 May 2004
9	Lowell Ploss	San Joaquin River Group Authority	14 May 2004

Comments received after 14 May 2004 will be considered and responded to in the written response to comments prepared for the 8, 9 July 2004 hearing to consider adoption of the proposed Basin Plan Amendment.

**Comment Letter # 1: Alex Hildebrand, Secretary, South Delta Water Agency**

April 21, 2004

Re: DO TMDL and Basin Plan Amendment

**Comment # 1.1**

The DO problem in the Ship Channel would not exist if the Channel had not been enlarged. Clearly, the Channel will never be returned to its original configuration, and so the problem will not be solved by addressing this cause. Ammonia in nearby urban discharges also contributes to the problem and can be regulated, but the data indicates that will not be sufficient to avoid the DO problem. If there were no algae in the inflow to the channel in excess of assimilative capacity, there would also be no problem. However, algae and the nutrients that nourish it are natural substances. They contribute to the aquatic food chain. It is not feasible to control the nutrients in the river system both time and quantity to a degree that would reduce algae growth sufficiently to have a substantial effect on the DO problem in the Ship Channel.

The remaining ways to solve the problem are providing an adequate minimum inflow to the Ship Channel or adequate aeration within the Ship Channel or a combination thereof. It has been established that the DO standard is met when there is a least an approximate 1500 cfs inflow in the summer months and somewhat less in winter months.

The pounds of oxygen that would have to be introduced if the sole solution were aeration have been calculated. However, those calculations have not been corrected for assimilative capacity within the channel, and there are substantial uncertainties regarding dispersion of introduced oxygen through the channel, particularly in the absence of some minimum inflow.

...we recommend that the development of the TMDL and Basin Plan Amendment to implement the solution to the dissolved oxygen problem include the establishment of a minimum flow in the San Joaquin River. This should be done in collaboration with measures needed to solve the salinity problem, and problems of water depth, water quality control, water circulation, and protection of fish and local navigation through the channels in the South Delta

**Response:**

Extensive data collection, analysis, and modeling are required as part of the control program proposed in the Draft Final Staff Report. The results of these studies will provide a better and quantified, understanding of the relative importance and interaction of the various factors and variables contributing to the dissolved oxygen impairment. Prior to these studies being completed, many of assertions made in the comments cannot be made conclusively.

The comments, however, correctly identify multiple potential causes to the problem. An equitable solution to the impairment, therefore, must distribute responsibility for the required mitigation measures in proportion to their contribution. To solve the problem by addressing only one of the contributing factors (imposing minimum flow objectives) would be not be equitable.

Furthermore, the regulatory authority that the Regional Board applies in solving these problems is focused primarily on the control of discharges of pollutants that contribute to impairments. Even though the TMDL identifies activities that reduce flow through the DWSC as sharing a portion of the responsibility for solving the problem, the Regional Board has only limited authority to control flow. The Regional Board will provide recommendations to that effect to the State Water Resources Control Board, Division of Water Rights.

**Comment Letter # 2: Alex Hildebrand, Secretary, South Delta Water Agency**

April 28, 2004

Re: Interrelated Measures for Control of Dissolved Oxygen, Salinity, Water Circulation and Water Depth in the San Joaquin River and South Delta

**Comment # 2.1**

An adequate inflow to the Ship Channel can eliminate the DO problem with greater assurance and less delay than other solutions.

Response:

Studies have identified three main causes to the problem: loads of oxygen demanding substances, DWSC geometry, and reduced flow through the DWSC. An equitable solution to the impairment, therefore, must distribute responsibility for the required mitigation measures in proportion to their contribution. To solve the problem by addressing only one of the contributing factors (imposing minimum flow objectives) would be not be equitable.

Furthermore, the regulatory authority that the Regional Board applies in solving these problems is focused primarily on the control of discharges of pollutants that contribute to impairments. Even though the TMDL identifies activities that reduce flow through the DWSC as sharing a portion of the responsibility for solving the problem, the Regional Board has only limited authority to control flow. The Regional Board will provide recommendations to that effect to the State Water Resources Control Board, Division of Water Rights.

**Comment # 2.2**

An adequate inflow will occur most of the time incidental to measures that are expected to be implemented as soon or sooner and with more assured effect than other means of controlling DO.

Response:

The control program in the proposed Basin Plan Amendment addresses multiple contributing factors including flow through the DWSC. To the extent that inflow into the DWSC is increased by these incidental measures, the corresponding improvements to dissolved oxygen conditions can be taken into consideration as actions to control other contributing factors are planned and implemented.

**Comment # 2.3**

The installation of permanent barriers within two to four years is required by the CALFED ROD, by the SDIP, by the need to meet interior South Delta Salinity standards, by negotiations among exporters and Delta interests, and by legal commitments. No other new facilities are required to provide a minimum inflow to the Ship Channel except the provision of fish-friendly low-lift pumps for use when the incidental flows cited above are less than 1500 cfs.

**Response:**

We recommend that the Department of Water Resources (as the lead agency for the SDIP and the State Water Project) and the US Bureau of Reclamation (as lead agency for the Central Valley Project) mitigate the effects of its activities that impact flow through the DWSC. The facilities described in the comment may represent an option for those lead agencies to consider during the planning phase for the SDIP.

**Comment # 2.4**

We believe that the Regional Board should concentrate on this flow approach to solving the DO problem. This would reduce the need for further lengthy studies of the other more problematic solutions.

**Response:**

See response to Comment # 2.1.

**Comment Letter # 3: Debra C. Liebersbach, P.E., Senior Civil Engineer, Turlock Irrigation District**

May 4, 2004

Re: Comments on the Public Review Draft (dated April 2004) of the Amendments to the Water Quality Control Plan for the Sacramento and San Joaquin River Basins for the Control Program for Factors Contributing to the Dissolved Oxygen Impairment in the Stockton Deep Water Ship Channel

**Comment # 3.1**

Regional Board staff has developed what they have commonly referred to as a “three-legged stool” approach, equally distributing responsibility to the three following “contributing” factors:

- Loads of oxygen demanding substances from upstream sources;
- DWSC geometry; and
- Reduced flow through the DWSC.

Information is not available on the significance of any of these factors. As a result, Regional Board staff is arbitrarily apportioning responsibility equally amongst the three “contributing” factors. Although this is described in the draft Basin Plan Amendment as equitable, in reality, it is not. By determining that the responsibility is equally placed, the proposed Basin Plan Amendment would potentially require significant costly modifications that might not result in a solution to the problem. For example, it has not been shown that if one-third of the impairment was removed by each of the three contributing factors, that the dissolved oxygen impairment would be solved. Until additional

information can be obtained to truly identify the actual distribution of responsibility to various factors that may or may not be contributing to the source of the problem, it is not appropriate to arbitrarily assign responsibility.

Response:

The apportioning of responsibility equally to the three main contributing factors is not arbitrary, but rather based on considerations of equitability and best available science. Furthermore, the first stages of the control program based on this apportioning require the completion of studies to further enhance our understanding of the causative factors. As these studies are completed, more detailed load allocations and better informed decisions can be made about which mitigation measures are best implemented to address these contributing factors. If direct control of some contributing factors is impractical or potentially ineffective, alternate mitigation measures may be considered as an acceptable means of complying with the allocations.

**Comment # 3.2**

Aeration was proposed, by a diverse group of stakeholders, as an alternative to load allocations. This type of a solution-based approach, although not a typical TMDL, had significant stakeholder support and had the potential to solve the impairment problem. The District continues to believe that this process is the most appropriate place to expend limited resources.

Response:

Aeration may likely be a practical and effective component of a larger suite of mitigation measures needed to solve this problem. Regional Board staff supports the development of the aeration demonstration project described.

**Comment # 3.3**

The draft Basin Plan Amendment suggests that flows are a significant factor that has resulted in the impairment. With the ever-growing population, water is going to be an increasingly scarce commodity. Releases of high quality river flows for dilution is not the most appropriate use of the limited water supplies of the State. Alternative solutions, like aeration, would better serve to resolve the problem without jeopardizing the State's water supplies.

Response:

Considerations of whether, or from where, to obtain water resources to address the impact of reduced flow must be addressed through planning and regulatory processes beyond the scope of this TMDL. Regardless of how it is addressed, responsibility for addressing the impacts still remains. The Basin Plan Amendment will allow the consideration of alternate mitigation measures. Aeration may likely be a practical and effective component of a larger suite of mitigation measures needed to solve this problem. There are also ways that directing flow differently through the Delta can augment flow through the DWSC thereby minimizing the need for additional water resources.

**Comment # 3.4**

The cumulative impacts of the various water quality requirements along the San Joaquin River need to be considered. Actions suggested with respect to reductions in flow from upstream sources for the Salt and Boron TMDL implementation plan would result in significantly reduced flows in the river system and exacerbate the dissolved oxygen issues in the DWSC. The Regional Board should postpone adoption of this and other TMDLs until an analysis can be completed of the three TMDL



implementation plans being proposed by staff (i.e. Salt and Boron, Dissolved Oxygen, and Organophosphorous Pesticides) to ensure they are complimentary and will not result in redirected, or unintended cumulative effects.

Response:

Many of the upstream sources of flow that would be reduced as a result of implementing TMDLs for salt, boron, or organophosphorus pesticides will also reduce loads of oxygen demanding substances and their precursors. Since the specific methods that dischargers will use to implement load reductions to comply with the dissolved oxygen or other TMDLs is not known, it is not possible to evaluate all redirected effects. Any such redirected effects will have to be assessed by the entities implementing the load reductions. It will also be the responsibility of dischargers to reduce loads in discharge to comply with the limiting TMDL. TMDL load limits and control programs are being developed so that the complexity and unique characteristics of each impairment can be most appropriately addressed. Any redirected and cumulative effects of the control programs developed for each successive TMDL will be evaluated as part of that successive TMDL's control program.

**Comment Letter # 4: Katherine F. Kelly, Chief Bay-Delta Office, California Department of Water Resources**

May 13, 2004

Comments on the Public Review Draft Staff Report for the Control Program for Dissolved Oxygen Impairment in the Stockton Deep Water Ship Channel

**Comment # 4.1**

The draft staff report proposes a process to establish a TMDL for the DO impairment in the designated segment of the San Joaquin River, now listed under CWA Section 303(d) (33 U.S.C. Section 1313(d)). The CWA, federal regulations, and the EPA Guidance for Developing TMDLs provide the legal authority for establishment of a TMDL. The TMDL must be established at levels necessary to attain and maintain the applicable water quality standards with seasonal variations and a margin of safety which takes into account any lack of knowledge concerning the relationship between effluent limitations and water quality. The Regional Board must establish a TMDL for all "pollutants" preventing or expected to prevent attainment of the identified water quality standards. (See 40 CFR section 130.7 (c).) Pollutant is defined as: dredged spoils, solid waste, sewage, chemical wastes, biological materials, heat, discarded equipment, rock, sand, and industrial, municipal, and agricultural waste discharged into water (33 USC section 1362(6); CWA Section 502(6)). Pollutant does not include flow of water or the shape of the channel.

The flow of water and shape of a designated channel are factors to be considered when determining the capacity of a segment of river to receive a load from pollutants without violating a water quality objective (40 CFR section 130.7 (c).) Here the Regional Board must establish a TMDL that addresses the load from pollutants that reduce oxygen concentration in the water to achieve or maintain the Basin Plan water quality objective for DO of 5 milligram per liter (mg/L), except during September through November when the objective is 6 mg/L. The TMDL must take into account the conditions of stream flow and other environmental conditions in order

to determine appropriate loading capacity. In other words, the TMDL must adjust the loads allocated to point and non-point sources based on whether stream flow is high or low. The Regional Board does not have authority to revise flows, as this is a water rights function performed by the SWRCB.

Response:

The comment is correct; the Regional Board does not have authority over water rights. The Regional Board can, however, take into account conditions, such as reduced flow, that impact the assimilative capacity of the waterbody. Based on equitability and other considerations, this TMDL *apportions* total oxygen demand loading capacity, less a margin of safety, in equal amounts to these three main contributing factors. The apportioning is a means for accounting for the impact that reduced flow and DWSC geometry have on the assimilative capacity of the waterbody.

The proposed phased TMDL merely provides an opportunity for the State Board, other agencies, and stakeholders to address the impacts of non-load related factors, before addressing them entirely through control of point and non-point sources of oxygen demanding substances and their precursors alone. The staff report and program of implementation makes recommendations to various entities that reduction of the impact from these factors should proceed. There are no specific assurances, however, that the actions recommended for other agencies will achieve the intended load reductions. To address this, the proposed Basin Plan Amendment was revised to add that the Regional Board will review allocations and implementation provisions based on the results of the oxygen demand and precursor studies and the prevailing dissolved oxygen conditions in the DWSC by December 2009. If implementation for the two non-load related factors during implementation of this first phase of the TMDL is not achieved, the remaining allocation of responsibility can be assigned, as appropriate as wasteloads or loads to sources of oxygen demanding substances and their precursors.

**Comment # 4.2**

The draft staff report proposing the TMDL for the DO impairment in the DWSC does not describe a TMDL supported by the CWA and its regulations. The TMDL must allocate the amount of pollutant matter or thermal energy that is introduced into receiving water without violating water quality standards, based on the loading capacity of that water. The loads are allocated from existing or future pollution sources that may be from point sources, or non-point sources, or natural background sources. The TMDL is the sum of the individual point sources, non-point sources and natural background allocations. (See 40 CFR section 130.2.) The CWA and its regulations do not include load allocations based on water flow or channel geometry and the staff report has no legal basis for allocating sixty percent of the TMDL to these factors.

Response:

The CWA allows for phased TMDLs. The proposed phased TMDL merely provides an opportunity for the State Board, other agencies, and stakeholders to address the impacts of non-load related factors, before addressing them entirely through control of point and non-point sources of oxygen demanding substances and their precursors alone.

**Comment # 4.3**

The draft staff report notes that the SWRCB, in Water Rights Decision 1641, directed the Regional Board to develop a TMDL for the DO impairment. SWRCB indicated that the TMDL process is an appropriate course for long term planning and ultimate improvement in DO concentrations and that it would “not take any water rights action to achieve the DO objectives until the TMDL is implemented” ( D-1641, pgs. 78-79, and 148). The draft staff report apportions total oxygen demand loading capacity in equal amounts to oxygen demanding substances, DWSC geometry and flows. This approach would result in the Regional Board avoiding proper implementation of a TMDL and would return the problem to the SWRCB without addressing approximately sixty percent of the TMDL loading capacity. This result is contrary to the intent of the SWRCB directive to implement a TMDL that addresses pollution loading in the DWSC.

For the above reasons, DWR recommends that the staff draft report be revised to establish a TMDL that apportions all of the loading capacity to point or non point discharges as required under the CWA

**Response:**

See response to Comment # 4.2.

**Comment # 4.4**

DWR does not object to a program of implementation that provides for phased implementation of the TMDL so that necessary studies may be completed to determine appropriate load allocations of oxygen demanding substances. DWR encourages the Regional Board to obtain the necessary information so that it may implement a legally defensible TMDL that addresses control of oxygen demanding substances. DWR does not support, however, amendments to the Basin Plan that recommend implementation of actions that are described as meeting an amount apportioned to flow or to DWSC geometry. (See Draft Staff Report, p.10.)

**Response:**

Regional Board staff has proposed that it is appropriate to recommend to other agencies (such as DWR and SWRCB) that actions be taken to address the impact of activities that reduce flow through the DWSC. As discussed in the response to Comment # 4.2 this will be done in a phased TMDL approach, before addressing the impairment entirely through control of point and non-point sources of oxygen demanding substances and their precursors alone.

**Comment # 4.5**

DWR agrees that a program of implementation should include recommended actions by other agencies that are necessary to achieve the specified water quality objectives (See Water Code Section 13242.). DWR believes that the draft staff report should include proposed Basin Plan amendments that recommend actions by other agencies that help improve the DO in the DWSC. As discussed below, DWR is participating with the Bay Delta Authority to develop proposals, such as the demonstration aeration project, to alleviate the impaired oxygen problem in the deep water ship channel. DWR believes that such cooperative actions to improve DO should be acknowledged by the Regional Board and does not believe it is appropriate at this time to refer this problem back to SWRCB to consider in a water right hearing.

Response:

We acknowledge the work that is ongoing in the development of the Delta Improvements package. The outcome of these efforts, however, is still pending and, as such, not something staff will reference in our staff report. The recommendation to the State Board Division of Water Rights is still appropriate, as they can decide based on progress in establishing and executing the commitments of the Delta Improvements Package whether further action is required.

**Comment # 4.6**

As part of the South Delta Improvement Program, DWR plans to construct and operate the Head of Old River (HOR) barrier for the benefit of San Joaquin River salmon and issues associated with low DO in the San Joaquin River near Stockton. The HOR barrier is closed for out-migrating salmon smolts for one month in the spring. DWR also closes the barrier to preserve flows in the San Joaquin River during the period of salmon in-migration from October through November. The fall barrier operation also helps maintain desired dissolved oxygen levels in the San Joaquin River by maintaining higher flows in the river.

Operation of the HOR barrier to increase dissolved oxygen concentration is not feasible, however, every time a DO sag is experienced because operation of this barrier can cause adverse impacts on endangered fish in the central Delta. Also, operation of the HOR barrier can cause water level and water quality problems in the south Delta (even if there were no State or federal exports). Therefore, DWR's operation of the HOR barrier to improve DO may be limited at times because of other competing beneficial uses of water in the Delta. DWR recommends that other actions, such as artificial aeration, should be considered to help meet the DO objective.

The California Bay Delta Authority (CBDA) is in the final stage of a feasibility study of a large scale demonstration project to artificially aerate water within the Stockton Deep Water Ship Channel to boost oxygen levels to meet water quality standards, with the feasibility study report due in June 2004. After approval of the feasibility study, it is anticipated that CBDA would fund the large scale demonstration project, possibly through 2000 Water Bond (Prop 13) funds or Prop 50 funds. Following the feasibility study report, DWR could embark on final design and construction of the large scale demonstration project. DWR currently funds water quality monitoring in the area and that monitoring could continue as surveillance to determine the effectiveness of the demonstration project in meeting the water quality DO objective

Following the large scale demonstration it may be determined that the combination of the use of the Head of Old River barrier and the use of Artificial Aeration in the Stockton Deep Water Ship Channel, and any other load related actions implemented through the TMDL for DO that SWRCB may impose, could address the low DO levels in the channel. If an approach is found, a long term operation could be instituted. DWR recommends that these actions be implemented before SWRCB pursues any actions affecting water rights for purposes of using flow to meet the low DO problem

Response:

Regional Board staff encourages the continuation of the efforts described. The SWRCB will need to use its own discretion on what further action to take, and when to take it, based on our recommendation.

**Comment Letter # 5: Mark J. Madison, Director of  
Municipal Utilities, City of Stockton**

May 14, 2004

Comments to the Draft TMDL for Dissolved Oxygen in the San Joaquin River

**Comment # 5.1**

While the draft report identifies the need for further data collection and analysis to comprehensively address the DO impairment, it identifies a quantitative “responsibility” for only one specific party; the Stockton Regional Wastewater Control Facility (RWCF). The implications of this proposed allocation are unclear and should be elaborated, perhaps with an example of how the loading reduction responsibility might be applied.

Response:

The Draft Final Staff Report contains new and revised language in Section 4.5.1 that clarifies the definition of responsibility for mitigation of excess net oxygen demand. Responsibility is quantified as a percentage of the sum of excess net oxygen demand plus the margin of safety. In the case of the RWCF, that percentage is 30% of the one-third apportioned to loads of oxygen demanding substances.

For example, on a hypothetical day when the measured dissolved oxygen concentration at the worst point in the DWSC is 3 mg/L, the net daily flow is 500 cfs, dissolved oxygen saturation is 8 mg/l and the dissolved oxygen objective is 5 mg/L, then the following are calculated:

$LC = 8,100 \text{ lbs/day}$ ,  $MOS = 0.4 \times LC = 3,240 \text{ lbs/day}$ ,  $ENOD = 5,400 \text{ lbs/day}$ ,  
 $R_{Load} = 1/3 \times (ENOD + MOS) = 2,880 \text{ lbs/day}$

The responsibility for the RWCF on this hypothetical day would be to reduce net oxygen demand in the DWSC in the amount of 30% of  $R_{Load}$  or 960 lbs/day.

Also, as discussed in Section 4.5.1, credit for source controls implemented after 12 July 2004 will count towards satisfying the oxygen loading capacity apportioned to the associated contributing factors. In this example, if sometime between 12 July 2004 and the hypothetical date, the RWCF has implemented new source controls that reduce the impact of its discharge on net oxygen demand in the DWSC by 960 lbs/day or more, then its obligation will have been satisfied.

Calculating a statistic that is representative of the baseline condition for this type of compliance determination has not yet been performed. This calculation can be performed and agreed upon after more information is available on the specific linkages between the oxygen demanding substances discharged in RWCF effluent and the associated oxygen demand exerted in the DWSC.

The 24 May revision of the staff report has also modified and clarified the load allocation for non-point sources and has added a ten percent reserve allocation for sources of unknown or insignificant impacts which includes upstream point source discharges.

**Comment # 5.2**

a) The State Board decided, after consideration of extensive evidence, not to take such action, and that the DO issue should be addressed through the TMDL. For completeness, this should be reflected in the staff report and any Basin Plan amendment.

b) ....the City received a new NPDES permit (in 2002), the implementation of which would significantly reduce ammonia concentrations in the effluent and would result in a large reduction in oxygen demand loading from the RWCF and a subsequent DO improvement in the DWSC. This point relates to the City's concern that this near-future reduction in oxygen demand loading be properly credited in the TMDL Phase I process.

Response:

a) A verbatim quotation of this State Board direction from Section 9.3 in Water Right Decision 1641 is provided in Section 4.6.5 of the Draft Final Staff Report.

b) See response to Comment # 5.1 and Section 4.5.1 of the Draft Final Staff report for a discussion of baseline conditions and credit for implementation of control measures.

**Comment # 5.3**

Stockton (and any other party) should be properly credited for any load reduction it achieves during the first phase of the TMDL. Stated another way, the baseline for future load and wasteload allocations that will guide the necessary load reduction responsibilities should be current (i.e. recent years of historical data) conditions, and the City (and any other party) should be credited for any load or wasteload reduction achieved prior to further allocation. We request this be made clear in the amendment.

Response:

See response to Comment # 5.1 and Section 4.5.1 of the Draft Final Staff report for a discussion of baseline conditions and credit for implementation of control measures.

**Comment # 5.4**

The draft staff report is ambiguous with respect to the difference between total loading capacity "allocations" and excess load reduction responsibilities. It is our understanding that the intent is to ultimately assign excess load reduction responsibility. We have enclosed with this letter a mark-up of the draft staff report that includes several suggested modifications that would achieve these clarifications. We recognize that ultimately loads may need to be expressed as total loads,

but the clarifications, we believe, express the intended logic. Please note that other comments provided here would also necessitate modifications to the draft staff report and proposed Basin Plan amendment; the specific comments provided in the enclosure relate primarily to an effort to clarify the approach and differentiate the total load allocation from the excess load reduction responsibility. The excess load is assumed to be the portion of the total load of oxygen demanding substances that causes a DO objective violation.

Response:

The concept of excess load reduction responsibilities stated in the comment and the attached mark-ups is generally correct, with some exceptions. Numerous modifications were incorporated into Section 4.5.1 of the Draft Final Staff Report that clarify our description of responsibility for mitigating excess net oxygen demand. These modifications should address the intent of this comment and the mark-ups made to the Public Review Draft Staff Report that were attached to the 14 May 2004 City of Stockton comment letter. Also see the response to Comment # 5.1 for further discussion.

**Comment # 5.5**

- a) The draft staff report properly identifies reduced flows as a factor leading to the DO impairment. Flexible operation of the South Delta barriers could improve flow conditions at little or no water “cost.” Barrier operations were discussed in the State Board Decision WR 1641 and in Stockton’s testimony and exhibits in Decision 1641 proceeding. We believe this operational alternative should be discussed specifically in the Basin Plan amendment and evaluated in further detail in the subsequent work.
- b) In particular, the methods for crediting increased flows toward the 1/3 responsibility for load reduction that has been assigned to flow during Phase I of the TMDL should be clarified.

Response:

- a) The barrier operations at the head of Old River, and the State Water Project and Central Valley Project pumping facilities that they provide mitigation for, collectively are activities that at times reduce flow through the DWSC. Such activities are addressed in the Basin Plan amendment to the extent that the Regional Board has authority over such activities. The Basin Plan amendment makes recommendations to the agencies responsible for those projects (primarily the California Department of Water Resources and the US Bureau of Reclamation) to mitigate the impact of their projects and to the State Water Resources Control Board, Division of Water Rights, suggesting that they consider requiring such mitigation as part of the water rights permit process. The evaluation of the extent of those impacts is the responsibility of the agencies responsible. Further discussion in the Basin Plan amendment or staff report is not warranted.
- b) The method for crediting increased flows toward the 1/3 responsibility for excess net oxygen demand will be influenced by the way in which the impact of flows is mitigated. The proposed Basin Plan Amendment language recommends that alternate implementation measures be considered for certain contributing factors that are not readily addressed by direct control. In the case of the South Delta Improvements Project (SDIP), endangered species issues in the South Delta may prevent the operation of the head of Old River Barrier to increase flow in the DWSC. In such instances, aeration may be an acceptable alternative. Until further analysis is performed

as part of the development of the SDIP, the quantities and nature of mitigation required by that project are uncertain, and further discussion of a way to credit those mitigation measures towards satisfying the TMDL is premature.

**Comment # 5.6**

The draft Basin Plan amendment does not propose any modification of water quality objectives. It should be noted, however, that the Board has an obligation to evaluate the objectives as part of its continuous planning process including triennial reviews. We believe it is appropriate to evaluate the basis for the current objectives and determine whether adjustments are appropriate.

Response:

Because the DWSC is severely out of compliance with the existing standards, Regional Board staff has focused on developing a TMDL to improve the problem, rather than focusing on an adjustment to the objective. As dissolved oxygen conditions improve in response to implementation of this TMDL, the need to modify the Basin Plan dissolved oxygen objectives can be evaluated as part of a subsequent triennial review and/or revision to this TMDL.

**Comment # 5.7**

We also ask that the Regional Board include in its record all testimony and exhibits that were submitted by Stockton in the Decision 1641 proceedings.

Response:

Representatives of the City of Stockton, and all other interested parties, should submit to the Regional Board any material they feel is relevant to the proposed TMDL and Basin Plan Amendment.

**Comment # 5.8**

The draft report identifies that [the ammonia effluent limits] were based on preventing ammonia toxicity. It does not recognize, however, that there remains a pending challenge to those limits as being unnecessarily stringent for toxicity purposes.

Response:

Stockton's current permit and Cease and Desist Order were issued in April 2002. The State Board issued an Order in March 2003 in response to the petition that upheld the ammonia limitations. Several portions of the adopted Orders were previously stayed, including the time schedule to construct nitrification facilities, for approximately 16 months. Staff acknowledges that Stockton has filed a lawsuit in San Joaquin County Superior Court over the Orders, including the ammonia limitations, and the litigation has not been settled to date. As of September 2003, however, the stays have been removed and the permit is in effect. Stockton is proceeding to comply with the ammonia limitations in accordance with the time schedules of the Order.

**Comment # 5.9**

It is similarly beyond doubt that the construction and operation of nitrification facilities to meet the new ammonia limits would have beneficial effects for DO. The construction of such



facilities obviously makes greater practical sense to Stockton if it is assured that it will receive credit for such reduction in the TMDL and any future allocation of load reduction responsibility. The Regional Board has ultimately determined the timing of the TMDL, and Stockton should not be penalized by that timing. It should be made clear that DO improvement prior to future load allocations will receive full credit in the TMDL process.

Response:

See response to Comment # 5.1 and Section 4.5.1 of the Draft Final Staff report for a discussion of baseline conditions and credit for implementation of control measures.

**Comment # 5.10**

The City is extremely concerned that the Regional Board not default to the historic approach of addressing DO impairment in the DWSC, which approach consists of regulating the RWCF to the exclusion of all other factors.

Response:

Comment noted. In the interest of equitability, the control program proposed in this Basin Plan Amendment addresses numerous other contributing factors to the dissolved oxygen impairment including the non-load related factors of DWSC geometry and reduced DWSC flow.

**Comment # 5.11**

It is our understanding, and we ask that you clarify, that adoption of this TMDL would not itself lead to the establishment of new regulatory controls for the RWCF, and further that the next NPDES permit (anticipated in 2007) would not include additional new requirements related to DO improvement. The City has already reduces its effluent concentrations of CBOD and ammonia to levels that are well beyond the fair allocation of load reduction responsibilities that are needed for DO improvement in the DWSC.

Response:

As discussed in the response to Comment # 5.1, the proposed control program will provide credit for improvements completed by the RWCF and other implemented after 12 July 2004. Regional Board staff, however, cannot determine at this time whether the planned improvements at the RWCF will adequately satisfy its obligations under the TMDL. Future regulatory processes will address the need for further regulatory controls as needed at that time.

**Comment # 5.12**

As indicated above, the City believes the draft report is ambiguous with respect to the important difference between load “allocations” to match the currently reduced assimilative capacity of the DWSC (because of the deepened geometry and reduced flows) and the assignment of “responsibilities” to reduce the current loadings or increase the assimilative capacity by raising flows or increasing the DO concentrations directly with aeration in the DWSC. The Basin Plan amendments should be revised to clarify these important distinctions, with language that is similar to the proposed changes (i.e., strike-out) in the Basin Plan amendments that are attached to this letter.

Response:

See response to Comment # 5.1 and Section 4.5.1 of the Draft Final Staff report for clarification of the difference between allocations of loading capacity and responsibility for mitigating excess net oxygen demand.

**Comment Letter # 6: Steve Chedester, Executive Director, San Joaquin River Exchange Contractors Water Authority**

May 14, 2004

RE: Public Review Draft Staff Report for the Control Program for Factors Contributing to the Dissolved Oxygen Impairment in the Stockton Deep Water Ship Channel (April 2004)

**Comment # 6.1**

The lands in the upper watershed that were being irrigated for decades before the DWSC was excavated should not be held responsible for a problem created by the dredging of the San Joaquin River to over three times its original depth.

Response:

The discharges of agricultural nutrients that contribute to excessive algae growth in the watershed are also partially responsible for excess net oxygen demand experienced in the DWSC. An equitable solution to the impairment must distribute responsibility for the required mitigation measures in proportion to their contribution. The control program in the proposed Basin Plan Amendment apportions responsibility among the three main contributing factors, which include: loads of oxygen demanding substances, such as algae and ammonia; DWSC geometry; and reduced flow through the DWSC.

**Comment # 6.2**

The relationship between discharges in the upper watershed, approximately one hundred river miles away from the DWSC, and the DO sags in the DWSC, is not understood. Attainable solutions must be scientifically based and grounded in reliable data. Studies are essential in order to determine possible solutions to the DO problem in the DWSC and are underway. A Basin Plan Amendment apportioning responsibility to the upper watershed without a better understanding of the full dynamics of the problem will not be scientifically sound or legally defensible. It would be irrational and arbitrary for the Regional Board to allocate responsibility to parties that may have no ability to improve the DO problem in the DWSC.

Response:

The allocations in the proposed Basin Plan Amendment are based on considerations of equitability and best available science. Clear empirical correlations exist between the growth of algae in the upper watershed and the dissolved oxygen impairment. The need to better understand the contribution from upstream sources, however, led to the requirement for further studies into the sources of oxygen demanding substances (i.e. algae) in the watershed, its

transformation as it moves downstream, and how its converted to oxygen demand in the DWSC. The Basin Plan Amendment proposes these studies to be completed before development of more detailed load allocations. Also, its is realized that practical and effective solutions to address the impact from excessive algae growth cannot be properly developed until such studies are completed.

**Comment # 6.3**

Algae are an essential part of the food chain in the San Joaquin River. It is one of the basic elements of the food chain. Disrupting the food chain by attempting to eliminate algae from the river could have severe environmental consequences. Additionally, certain areas in the Delta are nutrient starved. Removal of nutrients from the lower San Joaquin River will likely exacerbate those problems. These impacts must be analyzed prior to adopting any basin plan amendment that advocates removal of algae or nutrients from the San Joaquin River.

Response:

The Basin Plan Amendment does not advocate removal of algae or nutrients from the San Joaquin River; rather it identifies them as being partially responsible for the problem. As discussed in the response to Comment # 6.2, further study of the linkage between upstream sources must be completed before effective and feasible mitigation measures can be selected and implemented. It may be found that direct source control is not feasible or practical. In this case the responsibility still remains, and the Basin Plan Amendment proposes that the Regional Board may consider alternate mitigation measures.

It is agreed that potential negative redirected impacts from the reduction of algae generated in the upper watershed are an important consideration and must be studied. The conclusion, however, that algae reduction would exacerbate nutrient deficiency problems is premature until comprehensive studies have been performed.

**Comment # 6.4**

The excessive depth of the artificially deepened channel causes the algae to die and decay resulting in low DO levels in the DWSC. Allocating responsibility for the low DO conditions in the DWSC to the sources of algae ignores the reality that the algae is not the cause of the problem; the killing of the algae is the cause of the low DO levels in the DWSC. Those that are responsible for excavating the natural channel of the San Joaquin River to three times its original depth are the ultimate cause of the low DO levels in the DWSC.

Response:

See response to Comment # 6.1

**Comment # 6.5**

After theorizing that the elimination of any one of the three main factors (load, DWSC geometry, or flow) would eliminate of the low DO problem in the DWSC the Regional Board staff makes the illogical leap that each of these factors should be equally responsible for solving the problem. This analysis is overly simplistic, fundamentally flawed and not supported by any sound science. The observation that a factor may contribute to a problem does not establish a legal duty or moral responsibility for solving that problem.

Response:

See response to Comment # 6.2.

**Comment # 6.6**

The parties that contribute to algae loads in the San Joaquin River are not responsible for solving the DO problem in the DWSC for the following reasons:

- ◆ The lower San Joaquin River has contained naturally occurring algae for hundreds of years.
- ◆ Significant agricultural production has been in existence in the San Joaquin River watershed since the 1800's and the discharges from these farming activities have consistently contained nutrients sufficient to sustain algae growth in the River and adjoining sloughs.
- ◆ Algae are a natural and necessary part of the food chain in the lower San Joaquin River. The ecosystem would be harmed by eliminating algae in the river.
- ◆ There is not a low DO problem in the San Joaquin River upstream of the DWSC
- ◆ The unnatural depth of the DWSC kills the algae in the River and turns oxygen producing live algae into oxygen demanding decaying algae.
- ◆ The San Joaquin River channel was approximately 10 feet deep in the delta prior to the establishment of the DWSC. The first excavation of the DWSC to a depth of 26 feet was completed in 1933. In the late 1960's the Corp of Engineers began a project to deepen the DWSC but it was halted due to environmental concerns. In 1982 the Corp of Engineers resumed deepening the DWSC to 37 feet after promising to mitigate for inevitable DO problems caused by the depth of the channel. In 1987 the Corp of Engineers finished the excavation of the DWSC to 37 feet.

The above facts clearly show that the DWSC is the proximate cause of the low DO levels in the DWSC. Assessing any degree of responsibility on those who may contribute to algae growth is nonsensical and not supported by logic or science. The Regional Board has an obligation to assess responsibility on the party that has caused the problem and not to simply spread the pain to achieve political expediency.

Response:

See response to Comment # 6.1 and Comment # 6.2

**Comment # 6.7**

We ask the Regional Board to reconsider the simplistic allocation of responsibility proposed in the draft DO TMDL and Basin Plan Amendment, and, instead place the responsibility for solving the problems created by the construction of the Stockton Deep Water Ship Channel on those who made the decision to build the channel in the main stem of the San Joaquin River.

Response:

See response to Comment # 6.1

**Comment Letter # 7: Tim O'Laughlin, O'Laughlin & Paris LLP, on behalf of the San Joaquin River Group Authority**

Tim O'Laughlin  
O'Laughlin & Paris LLP  
Supplement to comments submitted by the San Joaquin River Group Authority

May 13, 2004

Comments to the Draft TMDL for Dissolved Oxygen in the San Joaquin River

**Comment # 7.1**

It is our understanding the mitigation obligation the USACE is to turn on its existing aeration device to maintain the dissolved oxygen level within the Deep Water Ship Channel (DWSC) at 0.2 mg/L above the background conditions within the DWSC during the period of 1 September through 30 November. The trigger for this action is anytime the dissolved oxygen level in the DWSC falls below 5.2 mg/L. At the time this mitigation was established it was estimated that the maximum daily oxygen contribution by the USACE would be approximately 2,500 pounds.

Response:

The mitigation obligation discussed was determined by the US Army Corps of Engineers as part of its NEPA environmental analysis for the deepening of the DWSC from 30 ft. to 35 ft. back in the late 1980's. These mitigation obligations are not a regulatory requirement as administered or enforceable by the Regional Board.

**Comment # 7.2**

The Basin Plan establishes the dissolved oxygen objective to be 5.0 mg/L throughout the year, except during 1 September through 30 November when the objective is 6.0 mg/L. The Basin Plan, if implemented, would require the parties to provide direct or alternate mitigation to maintain the dissolved oxygen level in the DWSC above 6.0 mg/L compared to 5.2 mg/L required of the USACE.

Response:

The Basin Plan does not require the parties to provide direct or alternate mitigation. The Basin Plan recommends that those entities responsible for existing activities that reduce flow through the DWSC, collectively, reduce one-third of the excess net oxygen demand (including the margin of safety) as defined in the TMDL. Likewise, the TMDL recommends that the US Army Corps of Engineers reduce one-third of the excess net oxygen demand (including the margin of safety). At this point, it is up to the various entities to work out the details of relative responsibilities for reductions among themselves.

In addition, the Regional Board will recommend to the State Water Resources Control Board that they consider modifying water right permits to require such reductions of those who reduce flow through the DWSC. As of this time, such requirements do not exist.

Also, the Regional Board will issue a CWC Section 13267 letter requiring the US Army Corps of Engineers to do a detailed study of the impact of the existing DWSC on the dissolved oxygen impairment. Among other things, such a study may assist the various parties in negotiating equitable shares of responsibility among themselves.

**Comment # 7.3**

The draft Staff Report indicates the Central Valley Regional Water Quality Control Board has limited jurisdiction over federal agencies such as the USACE. In this particular instance the Basin Plan, if implemented, would relieve the USACE of its mitigation responsibility. The USACE should be required to provide mitigation toward the new objective at a rate no less than 2,500 pounds per day.

Response:

The US Army Corps of Engineers must provide mitigation for the subject channel deepening per its obligations as determined by its NEPA environmental impact analysis. The recommendations and Section 13267 study requirements included in the Basin Plan amendment do not supersede their mitigation obligations under NEPA.

**Comment Letter # 8: Tim O’Laughlin, O’Laughlin & Paris LLP, on behalf of the San Joaquin River Group Authority**

Tim O’Laughlin  
O’Laughlin & Paris LLP  
San Joaquin River Group Authority

May 11, 2004

Comments on the Draft TMDL for Dissolved Oxygen in the San Joaquin River

**Comment # 8.1**

The majority of the actions necessary to accomplish the remaining load reductions are not within the Regional Board’s authority, however. The other actions are those recommended to be taken by other agencies. For example, the report recommends that the State Board “use its water rights authority to assign responsibilities for mitigating the impact on oxygen demand loading capacity to existing and future activities that reduce flow through the DWSC” and that all state, federal and local water resource management agencies evaluate and mitigate existing and proposed water resource projects’ impact on DO. (Staff Report, at 6). The program of implementation offers no assurances that the actions recommended for other agencies will achieve the intended load reductions.

Response:

The comment correctly points out that there are no specific assurances that the actions recommended for other agencies will achieve the intended load reductions. To address this, the proposed Basin Plan Amendment was revised to add that the Regional Board will review

allocations and implementation provisions based on the results of the oxygen demand and precursor studies and the prevailing dissolved oxygen conditions in the DWSC by December 2009. If implementation for the two non-load related factors during implementation of this first phase of the TMDL is not achieved, the remaining allocation of responsibility can be assigned, as appropriate to sources of oxygen demanding substances and their precursors.

**Comment # 8.2**

Neither the CWA nor TMDL regulations permit loading capacity to be allocated to anything other than point or non-point “sources” of pollutants. “Waste loads” are allocated to point source discharges and “loads” are allocated to nonpoint source discharges and natural background sources. (40 CFR § 130.2(g), (h)). The proposed TMDL impermissibly provides relative “apportioning” of loading capacity to the three factors, two of which are not sources for which loads may be allocated.

Response:

The apportioning is a means for accounting for the impact that reduced flow and DWSC geometry have on the assimilative capacity of the waterbody. As acknowledged, however, in the response to the previous comment, there are no specific assurances that the actions recommended for other agencies will achieve the intended load reductions. To address this, the proposed Basin Plan Amendment was revised to add that the Regional Board will review allocations and implementation provisions based on the results of the oxygen demand and precursor studies and the prevailing dissolved oxygen conditions in the DWSC by December 2009. If implementation for the two non-load related factors during implementation of this first phase of the TMDL is not achieved, the remaining allocation of responsibility can be assigned, as appropriate as wasteloads or loads to sources of oxygen demanding substances and their precursors.

**Comment # 8.3**

EPA regulations contemplate the effect of environmental factors, such as stream flow, on loading capacity in formulating TMDLs. The regulations provide that TMDLs shall “take into account critical conditions for stream flow” and other environmental conditions. (40 CFR § 130.7(c)(1)). As a result, loading capacity may have only a maximum based on low flow conditions, or may have a sliding scale based on varying flow conditions, all while assuring compliance with water quality objectives. Accordingly, EPA has already rejected the Staff proposal that loading capacity be allocated to those non-load factors. Therefore, waste load and load shall be allocated among the point and non-point sources and shall be adjusted for given stream flow and channel geometry conditions.

Response:

See response to Comment # 8.2 above.

**Comment # 8.4**

The CWA and regulations make no provision for allocating only a portion of loading capacity to point and non-point sources. In fact, because the CWA provides that NPDES permits shall include “any more stringent limitation . . . necessary to meet water quality standards,” the responsibility for reducing loading capacity in a TMDL falls to the point source dischargers if the load allocations for non-point sources are infeasible or ineffective. (33 U.S.C. §§

1311(b)(1)(C), 1313(e)(3)(A)). The Staff Report does not indicate whether more stringent waste load allocations may be required. Even if more stringent waste load allocations are required, the Staff Report assumes that combined waste load and load allocations would only be required to address one-third of the DO loading under the proposed TMDL.

Response:

See response to Comment # 8.2 above.

**Comment # 8.5**

Similarly, point sources may not receive less stringent waste load allocations unless the non-point source allocations are actually practicable. (40 CFR §§ 130.2(i), 120.44(d)). EPA Region IX policy guidance provides that practicability is shown where the load allocations are “technically feasible and reasonably assured of being implemented in a reasonable period of time.” (Guidance for Developing TMDLs in California, p. 10 (January 7, 2000)). Reasonable assurances may be provided through appropriate mechanisms but must include an “actual demonstration that the measures identified will actually obtain the predicted reductions and that the State is able to assure this result.” (*Id.*)

The proposed TMDL provides no assurances that the program of implementation will actually obtain the DO reductions. The Regional Board has regulatory authority over point and non-point source dischargers (of which it has provided a specific waste load/load allocation for one discharger only) and can condition 401 certification to require mitigation for new impacts (which arguably may not be implemented for many years), but it has no authority to address two-thirds of the factors that it identifies as presently causing the DO impairment.

Response:

See response to Comment # 8.2 above.

**Comment # 8.6**

The U.S. EPA has the authority to implement the TMDL program and the Regional Board stands in the shoes of the EPA in implementing the program in California. If the Regional Board fails to enforce the provisions of the TMDL, the EPA would step in to administer enforcement. The courts have made it clear that the federal government has no authority over a state’s water rights (*Kansas v. Colorado* (1908) 206 U.S. 46, 93), yet to allow a state agency to allocate responsibility to flow would give to EPA the power over water rights the courts have previously prohibited.

Response:

Comment noted. See also response to Comment # 8.2 above.

**Comment # 8.7**

The Staff Report notes considerable scientific and technical uncertainty of the three factors affecting DO and their interactions. (Staff Report, at 27-33, 37). The Staff Report jumps to the conclusion that because arguments can be made “provid[ing] a reasonable technical basis for why each contributing factor is *entirely* responsible for the impairment,” responsibility shall be allocated equally among the three factors. (*Id.*, at 39 (emphasis added)). Notwithstanding the



fact that the CWA does not allow for *any* load allocations to flow or channel geometry, the equal allocation lacks any technically defensible rationale.

Response:

The CWA does, however, allow for phased TMDLs. The proposed phased TMDL merely provides an opportunity for the State Board, other agencies, and stakeholders to address the impacts of non-load related factors, before addressing them entirely through control of point and non-point sources of oxygen demanding substances and their precursors alone.

**Comment # 8.8**

The discussion of flow effects on low DO was cursory at best. Regional Board staff failed to assess whether the water quality objectives could be met with the existing flows, together with a program of compliance from point and non-point source discharges. This may be due in part to a lack of information, but this does not justify compounding the mistake. For example, the Regional Board has acknowledged that thousands of miles of surface waters in the Central Valley are dominated by discharges from irrigated lands (Resolution No. R5-2003-0105), yet does not know the extent of the impact. (*Id.* at 22). Without knowing the extent of the impact, the Regional Board could not perform the necessary assessment. Even if allocation to flow and geometry were possible, the fact that the allocation to channel geometry and flow is not supported by sound technical, scientific or practical bases, makes any such allocation arbitrary and capricious, and it affects every subsequent action in the implementation program. There is no reason the Regional Board should excuse point and non-point source dischargers from two-thirds of the load responsibility until the data show the relative loading capacity reductions possible from said dischargers.

Response:

Although more work may be needed to obtain a detailed understanding of how flow affects dissolved oxygen in the DWSC, the net effect of flow on the dissolved oxygen impairment is clearly demonstrated in Figure 4-3 (pg. 33) and the studies cited in the Draft Final Staff Report. This provides adequate justification for a phased approach that will allow the time necessary to address this impact through the recommendations to, and actions by, other agencies and the responsible entities. See also response to Comment # 8.2 above.

**Comment # 8.9**

Staff also suggests that while there is a “strong” relationship between reduced flow and low DO in the DWSC, “more field and laboratory studies are required to better understand and quantify the effects of flow.” The Regional Board failed to assess what effect increased flow would have on meeting the water quality objectives and the likelihood of success. (*Id.*, at 31-33). The State Board in Decision 1641 found that there is “no evidence in the record showing what flow is necessary to achieve the DO objectives in the absence of a barrier [at the Head of Old River]. Low DO levels have been recorded even when San Joaquin River flows were relatively high.” (State Water Resources Control Board Water Right Decision 1641, p. 74 (1999), amended in Order WR 2000-02 (2000)).

In essence, the information necessary to allocate responsibility to flow does not exist and this allocation must be eliminated. As noted above, the Regional Board has no authority to allocated

loading capacity to flow and geometry. However, nothing prevents the Regional Board from recommending actions to improve flow and channel geometry at the time the Regional Board develops the necessary information to assess the effect of these non-load factors.

Response:

See response to Comment # 8.2 and Comment # 8.8 above.

**Comment # 8.10**

Consistent with State regulations providing that the basin planning process is the functional equivalent of CEQA, the Staff Report applied the following six alternative evaluation criteria in selecting a TMDL and preferred program of implementation: (1) likelihood of success, (2) flexibility, (3) equitability, (4) time for implementation, (5) consistency with state and federal law, and (6) cost of implementation. (Staff Report, at 52-53; *see* Cal. Code Regs., tit. 23, § 3720 et seq.). Staff developed five alternatives that varied according to whether load only or both load and non-load (flow, geometry) factors would be considered, and whether the TMDL would be issued based on current science or postponed until further information was obtained. (*Id.*, at 54-57). Staff selected the alternative that includes allocation to both load and non-load factors with phased implementation, whereby additional studies are completed by 2008, before the CVRWQCB makes specific, detailed load allocations to individual responsible parties.

Staff did not apply those evaluation criteria to the equal allocation of loading capacity to the three factors. Failure to do so is fatal under CEQA. CEQA and State Board regulations require analysis of a reasonable range of alternatives. (Cal. Code Regs., tit. 14, § 15126.6; Cal. Code Regs., tit. 23, § 3777). The equal allocation was not based on any defensible technical, scientific or feasibility criteria.

Response:

As indicated in the comment, alternatives were developed that both considered apportioning all responsibility to loads and apportioning equally to all three causative factors. The percent responsibility apportioned to the three factors was not varied in the formulation of alternatives. Cal. Code Regs., tit. 14, § 15126.6 states: “An EIR need not consider every conceivable alternative to a project. Rather it must consider a reasonable range of potentially feasible alternatives that will foster informed decision-making and public participation.” It further states: “There is no ironclad rule governing the nature or scope of the alternatives to be discussed other than the rule of reason.” The comment suggests that rather than, or in addition to the apportioning considered, several more permutations should have been considered. Already considered were alternatives based on apportioning of 100%, 0 %, and 0% to loads, flow, and geometry, respectively and another method where each factor is considered.

As the comment indicates, there is no scientific basis for a more specific apportioning of responsibility. Further variability of the apportioning split, for example to 50%, 25% 25% to loads, flow, and geometry, respectively would serve no useful purpose with the information currently available. The staff report describes the basis for the 33.3%, 33.3%, 33.3% apportioning of responsibility.

**Comment # 8.11**

The Regional Boards have no regulatory authority to require water rights holders to release additional flow through the DWSC. The authority over water rights is vested in the State Board, which has already contemplated flow and DO objectives for the San Joaquin River. In Decision 1641, the Board considered various factors contributing to the DO problem and concluded that it would not take any action to meet DO objectives until the Central Valley Regional Board has “determine[d] effluent limitations based on TMDL results” and “has established a TMDL and has implemented it before taking further action to achieve the DO objectives.” (State Water Resources Control Board Water Right Decision 1641, p. 74 (1999), amended in Order WR 2000-02 (2000)). Accordingly, the proposed Regional Board action conflicts with the State Board’s directive.

Furthermore, the Staff Report’s recommendation that the State Board require additional flow releases appears to be for nothing more than increased waste assimilative capacity or dilution in the DWSC. Increased flow for the purposes of increased assimilative capacity or dilution is not a beneficial use of water. (*See Water Quality Control Plan for the Sacramento River and San Joaquin River Basins*, p. II-1.00 (1998)). The legal responsibility of the Regional Board is clear: it must assign waste load and load allocations to sources of pollutants to attain the Basin Plan DO objectives. The Regional Board cannot, in effect, relax standards for sources of pollutants, or fail to enforce the existing standards, and then ask the State Board to assume its obligations.

**Response:**

See response to Comment # 8.2 and Comment # 8.8 above.

**Comment # 8.12**

The Regional Board staff relies heavily on a document that was characterized as a synthesis of available information. However, the use of this document raises questions for two reasons. First, this document’s author, Dr. G. Fred Lee, has recently provided an advocacy piece on Delta water quality issues to DeltaKeeper, raising the specter of bias. Second, Dr. Lee’s report was held out to be a synthesis of available information, yet the Regional Board staff made little effort to cite to original material and reports, instead relying on Dr. Lee’s interpretations of those reports. Furthermore, it is unclear whether Dr. Lee reviewed and synthesized all available materials or used his discretion in assessing a report’s relevancy, thereby introducing a reviewer’s bias by omission. The Regional Board staff has inappropriately delegated to Dr. Lee the task of reviewing and interpreting the key scientific evidence. This is improper.

**Response:**

As described in the preface to the Synthesis Report, the report was prepared “to assist the Steering Committee and the CVRWQCB in developing the low-DO control program...” and was funded by the California Bay Delta Authority. The report “presents a synthesis of the current technical information that has been developed from (\$3.5 million of peer reviewed research studies) that can help guide the formulation of a Phase I TMDL....” Most of these studies and the portions of the Synthesis Report cited in the Draft Final Staff Report were all peer-reviewed by an independent, CALFED sponsored, panel of experts in June 2002. Additionally, numerous citations in the Draft Final Staff Report were made to materials and reports other than the Synthesis Report.

## **Comment Letter # 9: LF Ploss, San Joaquin River Group Authority**

LF Ploss  
San Joaquin River Group Authority

May 14, 2004

Comments on the Draft TMDL for Dissolved Oxygen in the San Joaquin River

### **Comment # 9.1**

The RWQCB in preparing the BPA acknowledges that the inter-relationship of the three factors cannot be defined and further studies will be needed. This points out the most significant error in the existing BPA of assigning responsibility in three equal parts for convenience and not based on scientific findings. This approach is further confounded in the RWQCB recommends implementation actions to address each factor. Without understanding the scientific inter-relationship among the three factors the required magnitude of any single solution cannot be determined nor can it be determined how the DO impairment within the DWSC will respond to any given implementation action.

#### Response:

Although more work may be needed to obtain a detailed understanding of how flow affects dissolved oxygen in the DWSC, the net effect of flow on the dissolved oxygen impairment is clearly demonstrated in Figure 4-3 (pg. 33) and the studies cited in the Draft Final Staff Report. Also, the lack of impairment upstream of the DWSC clearly implicates its presence as a contributing factor. This provides adequate justification for a phased approach that will allow the time necessary to address this impact through the recommendations to, and actions by, other agencies and the responsible entities. This will include studies to better understand the relative contributions and potential ways to mitigate the impacts from the non-load related factors.

### **Comment # 9.2**

DO or absence of DO is not a pollutant. 40CFR, Part 130 §130.2 defines pollution a man-made or man-induced alteration of the chemical, physical, biological, and radiological integrity of water. Further loading capacity is greatest amount of matter or thermal energy that is introduced into a receiving water without violating water quality standards. The RWQCB has attempted to side step the conflict between absence of DO and the introduction of matter into the DWSC by addressing the assimilative capacity of the DWSC as being the problem. At this time the RWQCB is unable to determine the limiting volume of matter that may be introduced from upstream sources that diminish the assimilative capacity of the DWSC. In several instances throughout the BPA the RWQCB states that based on recommended studies and future findings subsequent TMDLs will be prepared. From this approach it is apparent the RWQCB understands that a DO impairment alone cannot be the subject of a TMDL. The RWQCB proposed in the BPA a phase implementation approach of studies and subsequent TMDLs. The reality is the BPA is not recommending a phase implementation to address the DO impairment

but a phased imposition on unsuspecting parties to investigate and to define future regulatory actions.

Response:

The staff report demonstrates that the dissolved oxygen impairment is the result of a man-induced alteration of the chemical and physical integrity of water. For this reason, the Stockton Deep Water Ship Channel portion of the SJR was listed as impaired for organic enrichment / low dissolved oxygen (chemical / physical). It is therefore appropriate and necessary to develop a TMDL for this waterbody that is not attaining standards.

The proposed phased TMDL provides an opportunity for further science to be performed and for the State Board, other agencies, and stakeholders to address the impacts of non-load related factors. Based on the outcome of these studies and actions taken in response to our recommendations, the remaining impairment will be addressed entirely through control of point and non-point sources of oxygen demanding substances and their precursors alone. The comment correctly identifies the intent of the Regional Board to consider future regulatory actions based on the outcome of the studies required in the proposed phased TMDL.

**Comment # 9.3**

Page 6, Para 1. Under Actions Recommended for Implementation by Other Entities the RWQCB does not identify the California State Lands Commission (CSLC). The CSLC has statutory jurisdiction over all sovereign lands within the state including the beds under all navigable rivers. As such the CSLC should be involved in actions regarding the use, disturbance, and future modification to the DWSC. The CSLC should be required to take the appropriate actions against those parties responsible for altering the San Joaquin River channel.

Response:

Comment noted.

**Comment # 9.4**

Page 9, Para 1. In reviewing the supporting TMDL it is apparent that equitability was not a consideration in determining the responsibility of the three main factors. The assignment of responsibility is based on convenience and not on the understanding of scientific mechanisms and inter-relationships involving the three contributing factors.

Response:

See response to Comment # 9.1.

**Comment # 9.5**

Page 9, Para 3. The Loading Capacity equation does not recognize the background assimilative capacity of the system. In the TMDL determination of loading capacity the RWQCB has failed to recognize the assimilative capacity of the San Joaquin River between Channel Point and Disappointment Slough in the absence of man-induced alterations that created the DWSC.

Response:

Because of the highly altered and manipulated state of the San Joaquin watershed and the lack of historical data, the determination of background conditions is not possible. To accomplish this by determining the assimilative capacity by assuming the absence of the DWSC only would not adequately account for other alterations to flow regimes and nutrient/algae concentrations.

**Comment # 9.6**

Page 10, Para 2 (#4.) The BPA and supporting TMDL fails to address the impacts associated with the past development of the DWSC. The Clean Water Act does not allow for such “grandfathering” of actions. The BPA, as well as past actions by the RWQCB staff, indicate a reluctance to seek full mitigation for the creation of the DWSC.

Response:

Actions to address the effects of the existing DWSC geometry that are within the authority of the Regional Board are included in the proposed Basin Plan language.

The Regional Board does not have legal authority to require mitigation for the existing DWSC geometry. Per CWC Section 13242, however, the Regional Board can make recommendations to the US Army Corps of Engineers to that effect. This recommendation is part of the latest version of the proposed Basin Plan amendment.

The Regional Board also has authority per CWC Section 13267 to require that the US Army Corps of Engineers perform a study to quantify their impact on the dissolved oxygen impairment. The requirement for such a study was included in the Draft Final Staff Report and new proposed Basin Plan language.

**Comment # 9.7**

Page 15, Para 4 & Page 16 , top. The BPA describes the Tier 2 approach as “regulatory-based encouragement of management practices” to encourage adoption of management practices and agreements by waiving adoption of WDRs. Yet on page 16 the BPA is proposing no Tier Two or Tier Three actions until further studies as imposed upon apparent responsible parties are completed. This is not consistent with language elsewhere stating that the RWQCB will consider alternative mitigation measures. In fact through the RWQCB support DO-TMDL Steering Committee process the RWQCB has encourages a stakeholder assurance agreement for operating a demonstration aeration project with an in lieu of direct mitigation actions.

Response:

Modifications to this section of the staff report will be required to make it consistent with the nature of the actions in the proposed Basin Plan Amendment.

**Comment # 9.8**

Page 24, Para 3. DO impairment is not a hindrance to the treatment of water for drinking water purposes and the implication that low DO is a drinking water issue is incorrect. The Plan states that the Delta provides drinking water to two thirds of the people in California. The Delta is the location for diverting water supplies used by the diverters for drinking water

purposes. The source of the water diverted is from throughout the Central Valley of which the San Joaquin River accounts for approximately 19 percent of the inflow to the Delta.

Response:

The beneficial uses affected by the dissolved oxygen are fisheries related only. This is stated in Section 4.2. The reference to drinking water uses in Section 4.1 is only for background.

**Comment # 9.9**

Page 29, Top of Page. It is stated in the BPA that nitrogen compounds in the SJR are currently about 10 to 100 times higher than limiting values. What are the limiting values and how does this loading vary throughout the year in comparison to the DO concentrations in the DWSC? The referenced document (Lee and Jones-Lee, 2003) provided no additional information or basis for the statement. This is one of many instances where RWQCB used generalities or unsubstantiated statements in an effort to justify the severity of the problems and magnitude of the apparent causes.

Response:

Per Lehman, P.W., “*Oxygen Demand in the San Joaquin River Deep Water Channel*”, Fall, 2001 pg. 21, limiting nutrient levels for algae growth are 0.1 mg/l to 0.2 mg/l for inorganic nitrogen and 0.01 to 0.02 mg/l for orthophosphate. This report was one of the CALFED study reports peer-reviewed and referenced in the Synthesis Report.

**Comment # 9.10**

Page 29, Para 1. This paragraph indicates that one question to be addressed deals with the relative impact of reduced flows from the three main eastside tributaries on algae concentrations. No specific reference is given to substantiate this statement. The reference that is given, Foe, et al., 2002 pg. 20-22 is in error. This particular reference to the Strawman Report is for a passage discussion change in concentration of organic material between Vernalis and Mossdale. The statement regarding flow contributions from the east-side tributaries are made in the Strawman Report (Foe, et al., 2002, pg. 7) that 62 percent of the metered summer flow at Vernalis originates from the these tributaries.

Response:

This passage correctly addresses the concept of the need to better understand travel times between Vernalis and the DWSC, including the most downstream sampling point on the Dahlgren study at Mossdale (end of pg. 21 and beginning of pg. 22). The passage referenced regarding the potential impact of reduced flows from the three main eastside tributaries on algae concentrations, however, is at the middle to end of pg. 23. The passage referenced (Foe, et al., 2002 pg. 20-22) at the end of page 29, para 1, will be modified to include pg. 23.

**Comment # 9.11**

Page 30, Para 1. The BPA states that further study of animal wastes contribution to the DO impairment must be made. It should be reported that U.S. Geological Survey has reported that animal wastes in 2000 and 2001 represent a significant contribution to the impairment. (USGS 2004

Response:

The reference to the Kratzer, C.R. et. al., 2004. *Sources of Transport of Nutrients, Organic Carbon, and Chlorophyll-a in the San Joaquin River Upstream of Vernalis, California, during Summer and Fall, 2000 and 2001*. US Geological Survey, Water-Resources Investigation Report 03-4127 was added to the Draft Final Staff Report.

**Comment # 9.12**

Page 30, Para 6. “Using flow and organic loading data from 1999 and 2000, the model predicted no violations of the 5 mg/L DO water quality objective when natural SJR dimensions were used to replace the modeled DWSC geometry.” This statement points to the difficulty of distributing the responsibility equally to the three main factors. If the responsibility were to be equally distributed this seems to indicate that if only one third of the DWSC geometry were replaced with SJR dimensions then the geometry factor is addressed and one-third the impairment removed. This condition or any other condition has not been evaluated by RWQCB to validate the hypotheses of the three-way split.

Response:

The three-way split is not a technical hypothesis that can be modeled and validated. Aside from technical considerations, the three-way split is based on considerations of fairness/equity, likelihood of success, and other considerations, as allowed by 1991, USEPA Technical Support Document for Water Quality Based Permit Decisions. The three-way split is primarily used to indicate that all entities responsible for contributing to the impairment through any one of the three causative factors must share equally in removing the impairment. It is not a technical hypothesis on how DO conditions in the DWSC will respond to potential mitigation measures.

**Comment # 9.13**

Page 31, Para 1. The same problem with assigning responsibility under the three-legged stool approach is obvious when the flow factor is discussed. “Data and studies show a strong relationship between reduced flows in the DWSC and low DO conditions in the DWSC.” This relationship is only apparent if the remaining two legs are ignored therefore taking the leap that if flow is increased then no DO problem remains. But, how much must the flow increase? As stated by the RWQCB the inter-relationship of the three factors cannot be defined therefore the change in flow cannot be defined.

Response:

Figure 4-3 shows the relationship between flow and DO concentrations. At flows above 3,000 cfs, there has, historically, been no DO impairment. The proposed Basin Plan Amendment and program of implementation provide flexibility with regard to how the DO impairment is eliminated. See also response to Comment # 9.12.

**Comment # 9.14**

Page 31, Para 2. The statement of the fifteen-year moving average of the annual discharge in the late 1990's was approximately 800,000 acre-feet lower than in the late 1940's is not an accurate representation of the hydrologic condition of the watershed. The fifteen-year period ending in 1949 represented 5 wet years, 5 above normal years, 3 below normal year, and 2 dry years based



on the unimpaired runoff for the San Joaquin valley. By comparison the fifteen-year period ending in 1999 represented 6 wet years, 1 above normal year, 1 dry year, and 7 critical years. The latter period included six consecutive years classified as critical. Irrespective of the reservoir operations and diversions taking place the runoff from the watershed would have been reduced. The final statement of the paragraph does not provide a basis for the analysis and represents information that is 24 years outdated with respect to the current situation of the DWSC.

Response:

Comment noted. The subject information is factual and is provided as background.

**Comment # 9.15**

Page 31, Para 3. The RWQCB twice makes reference to the change in average annual discharge between the 1940s and the late 1990s. It is not clear if the RWQCB is attempting to establish a baseline condition for flows or emphasizing the general trend in reduced flow at Vernalis. A reduction in summer time flows does not necessarily equate to lower DO in the DWSC. Further in the more recent years the flow at Vernalis has been managed to regulate for other water quality and environmental considerations such as salinity, Delta water quality objectives, and flows for salmon migration. The two paragraphs do point out that the RWQCB does not recognize the significant development that has taken place in the valley over nearly a 65 year period. Increased agricultural consumptive use is not the only cause. Out of basin diversions and expanding urban water use also contributes to the change in flow patterns. Reference to a 24-year old 1980 study reflects the use of out-dated data that does not indicate conditions as existing today.

Response:

Comments on other activities that affect flow in the San Joaquin River are noted. The discussion of activities that reduce flow through the DWSC in Section 4.3.3 is meant only as background and is not intended to be an exhaustive discussion. No conclusions or regulatory actions addressing the relative impact of different activities that potentially reduce flow in the DWSC are included in the Staff Report or Basin Plan Amendment. See also responses to Comment # 9.5 and Comment # 9.14.

**Comment # 9.16**

Page 32, Para 1. The Plan indicates that between 50-90 percent of the SJR flow is diverted down the HOR. Based on a review of Figure 4-3 it appears that if SWP/CVP exports were adjusted in order to restrict between 80 and 200 CFS less flow from entering the HOR any portion of flow induced DO impairment would be addressed. This seems overly simplistic but does comport with the concept that flow is responsible for one-third of any excursion from the water quality objective.

Response:

Comment noted.

**Comment # 9.17**

Page 32, Para 3. The statement that the average allowable diversion capacity into Clifton Court Forebay will increase from 6,680 to 8,500 CFS is in error. Correctly stated the average daily diversion at Banks Pumping Plant is planned to increase from 6,680 CFS to 8,500 CFS. The maximum increase over short-term diversions into Clifton Court Forebay during high tide may be significantly greater. In fact, depending on the sequence of gate opening the short-term diversion may be two, three, or more times greater. The short-term diversion combined with the maximum diversion rate of 4,600 CFS at Tracy Pumping Plant coinciding with tidal induced reverse flow in the DWSC, may cause significant short-term DO excursions in the DWSC. Scientific studies have not been implemented to evaluate the effect of ever greater short-term DO excursions in the DWSC. Flow contributions from upstream of the HOR may provide little benefit when combined with such short-term flow fluctuations resulting from SWP/CVP export operations. Therefore the RWQCB cannot provide a general statement with any certainty that the flow factor equates to one third of the cause or for one third of the responsibility.

**Response:**

The description of the allowable diversion capacity into Clifton Court Forebay was based on descriptions provided by DWR, but ultimately are provided for background purposes only. The potential impacts of increased flow diversions must be evaluated as part of the planning and environmental impact analysis performed for those projects. Regional Board staff will not speculate on the outcome of those analyses. See also response to Comment # 9.12.

**Comment # 9.18**

Page 33, Top Para. The main emphasis for increasing flow through the DWSC is to decrease the resident time oxygen consuming material within the DWSC. It should be stated that some reports raise concern that increase flow through the DWSC may contribute to other water quality problems in the Central and South Delta. (G. Fred Lee, Summary of The Role of SJR DWSC Flow in Causing Low DO in the DWSC, September 15, 2003)

**Response:**

Further water quality modeling that comprehensively considers these and other chemical, biological, and physical mechanisms is required to better understand their net effect. Potential redirected effects of measures to reduce impacts on the dissolved oxygen impairment must be considered before the responsible parties implement them.

**Comment # 9.19**

Page 34, Figure 4-3. A review of Figure 4-3 appears to indicate that at a flow over 750 CFS the average minimum concentration is 5 mg/L. Similarly at a flow of about 1,000 CFS the average minimum concentration is 6 mg/L. Therefore with everything else equal if the flow is increased by just 83 CFS the average DO concentration would increase from 5.0 mg/L to about 5.3 mg/L. The remaining responsibility would be that of DWSC geometry and upstream loading of material. It is highly unlikely this type of argument is correct yet this is the type of argument the RWQCB is putting forth.

Response:

For the purpose of evaluating compliance with the dissolved oxygen objective, the analysis presented is flawed. Average concentrations are not an appropriate measure of compliance with an objective that applies at all times and places. See also response to Comment # 9.12.

**Comment # 9.20**

Page 35, Equation 4-1. As was noted by Mr. Russ Brown, Jones & Stokes, during the April 12 public meeting this equation does not accurately represent the assimilative capacity of the DWSC. The equation should include a function to represent the re-aeration that occurs in the DWSC during the travel time from Channel Point to the location of the DO sag.

Response:

Please see modifications to the Draft Final Staff Report that address this comment. The concept of net oxygen demand is now used to address the combined impact of all mechanisms that add or remove dissolved oxygen from the water column.

**Comment # 9.21**

Page 37, Para 2. The margin of safety associated error rate of flow measurement of 20 percent is overly conservative. Between 2000 and 2004 the Vernalis Adaptive Management Program has coordinated reservoir operations on the three east-side tributaries with the flow on the San Joaquin River originating from upstream of the Merced River and with the daily accretions along the San Joaquin River in order to maintain an average daily flow at Vernalis over a 31-day period. The coordinated operation is in compliance with flow objectives prescribed in the water rights Decision 1641. This has been accomplished over the past five years with average daily flows being maintained within a planned plus or minus range 7 percent and often within less than 5 percent.

Response:

The flow measurement error discussed in this comment was not based on data from the meter addressed by the margin of safety, nor is it in a location that is affected in the same way by tidal flows. Based on professional judgment of Regional Board staff, the margin of safety, as proposed, is appropriate.

**Comment # 9.22**

Page 37, Para 3. The RWQCB failed to describe the basis for a 20 percent margin of safety related to scientific uncertainty except for “professional judgment”. Significant economic impacts will be imposed upon parties considered to be responsible for the DO impairment based on this inadequate justification. How the margin of safety applies to real-time management of the DO impairment is unknown and is most likely unnecessary.

Response:

The oxygen demand and precursor studies should provide information that will lead to a reduction in scientific uncertainty. The Regional Board can address this margin of safety along with all the allocations and implementation provisions by December 2009.

**Comment # 9.23**

Page 37, Equation 4-3. As commented above the RWQCB acknowledges a lack of understanding of the inter-relationship among loading of oxygen demanding material, DWSC geometry, and flow. It is speculative that the three contributing factors will be equal at all times. Removing DWSC geometry and flow from the loading capacity in order to determine the upstream TMDL is incorrect. Any reduction in loading capacity caused by the DWSC geometry and flow must be evaluated independently with the upstream load factor being DWSC geometry and flow dependent.

**Response:**

See response to Comment # 9.12.

**Comment # 9.24**

Page 39, top. The BPA refers to the work performed by Dr. Chen and referenced by Dr. Foe, et al, concluding that if the DWSC geometry was similar to the SJR then no DO impairment would exist. How this finding is transformed into the three-legged stool approach is one of convenience not science. To extend this finding to the BPA implementation adds further confusion. For example, any necessary action to treat a DO impairment through an upstream load reduction and/or increase in flow would need to assume that one third of the DWSC was reconfigured to simulate the SJR. However an analysis has not been performed on the DWSC with one third of the geometry so modified. Similarly such analysis has not been performed for combinations of the two remaining factors.

**Response:**

See response to Comment # 9.12.

**Comment # 9.25**

Page 39, Equations 4-5 & 4-6. The two equations attempt to demonstrate that the loading capacity less the margin of safety can simply be divided into three equal parts. However, no analysis has been conducted to prove this hypotheses. The contribution from solving one factor simply cannot be determined by assuming the two remaining factors have been addressed. The interdependence of the three factors is highly variable. The RWQCB has not demonstrated the reliability of equations 4-5 & 4-6 to allow implementation to go forward.

**Response:**

See response to Comment # 9.12.

**Comment # 9.26**

Page 40, Para 1. The RWQCB states that progress in implementing the TMDL will not be measured against any baseline but rather controls will be imposed until such time as the DO objective is met. Without some baseline to measure the DO deficiency against no means is available to determine if any of the apparent responsible parties have applied the proper proportion of controls. Significant uncertainty exists in this approach and must be assumed in the analysis that any one party may be meeting the responsibility for the others.

Response:

As discussed in the Draft Final Staff Report, baseline conditions cannot be readily determined because of the highly altered state of the San Joaquin River watershed and the lack of historical data. Progress in implementation of source controls for this TMDL, therefore, will not be measured against a baseline of current or historical conditions. Instead, source controls and other measures will be applied according to the apportionment of loading capacity described above (equal distribution to the three contributing factors) until the DO impairment is eliminated. Credit for source controls or alternate measures implemented after the adoption of this Basin Plan Amendment by the Regional Board will count towards satisfying the oxygen loading capacity apportioned to the associated contributing factor. This will require the ability of responsible parties to quantify the amount of impairment reduction achieved by the various source controls and/or alternate measures. The information obtained from the additional studies described in Section 4.6 will be required before the benefit of such source controls and/or alternate measures can be properly quantified.

**Comment # 9.27**

Page 40, Para 3. A reference is made to Lee and Jones-Lee, 2003, pg. 63. This particular reference is to a 2003 Synthesis and Discussion on the Causes and Factors Influencing Low DO in the San Joaquin River Deep Water Ship Channel near Stockton, CA. This is a reference to a March 21, 2003 report prepared independently by the authors. The steering committee neither requested nor sanctioned the reference report and any indication of such should be removed. The DO-TMDL Steering Committee completed its obligation to the RWQCB on February 4, 2003. The referenced report may or may not have been requested or sanctioned by the CALFED Bay-Delta Program but it must be noted the report has not received benefit of any independent science peer review consistent with CALFED practice and policy.

Response:

The cited material (Lee and Jones-Lee, 2003, pg. 63) was included in the 1 May 2002 version of the Synthesis Report that underwent CALFED peer-review in June 2002. As such, the box model calculations, upon which allocations were based, have received independent scientific review. The 1 May 2002 version of the Synthesis Report is available on the DO TMDL Steering Committee's website at [www.sjrtmdl.org](http://www.sjrtmdl.org). See discussion of box model calculations beginning on pg. 37 and in Appendix D of that peer-reviewed version of the Synthesis Report.

**Comment # 9.28**

Page 41, Para 2. The BPA states in various sections that additional studies will be necessary to determine the quantity and to tally the amount of mitigation achieved by the various source controls. Yet, the RWQCB has concluded that 30 percent of the oxygen demand loading capacity be allocated to the Stockton RWCF. The 2002 Synthesis Report prepared under the direction of the DO-TMDL Steering Committee concluded that up to 50 percent of the loading capacity may be attributed to the RWCF and the 2003 synthesis report referenced by the BPA states up to 90 percent. Studies in late 2003 by Dr. G. Fred Lee indicate the range to be between 20-30 percent at a flow of 1,000 CFS through the DWSC and as high as 90 percent at a flow of only a few hundred CFS through the DWSC. It is not clear how any allocation to a single source can be definitively made while admitting that other such allocations cannot be made. Unfortunately the RWQCB indicates this to be a "preliminary" allocation subject to modification

in subsequent TMDLs. Significant uncertainty and economic consequences are imposed upon all apparent responsible parties based upon vague assumptions and reliance upon subsequent TMDLs.

Response:

Significant uncertainty exists and is appropriately imposed on all apparent responsible parties, until the studies needed to clear up the uncertainty are completed. Significant economic consequences, however, are not imposed by this proposed TMDL that are based or influenced by the relative allocation of load and wasteload allocations. Much of the economic impact of the studies required in this TMDL have already been earmarked for funding by the California Bay-Delta Authority using Proposition 13 bond funds.

**Comment # 9.29**

Page 41, Para 3. The RWQCB summarizes the allocation of responsibility to the three main factors. The difficulty with such an allocation is that it cannot be implemented. We make the same argument here as elsewhere. It is acknowledged by the RWQCB that no scientific mechanism yet exists to define the proportionate responsibility share to any one main factor. Mitigation is confounded since no party can determine when a proper apportionate share is being met. Nor is it possible without a full understanding of the mechanisms involved to know how any single mitigation action related to other actions. Should a party assume that if the DO deficit is 3 mg/L then the correct mitigation to be applied is for 1 mg/L, equal to only one third of the excursion, or is it the full 3mg/L, or as stated on page 40; whatever controls are necessary until the objective is met?

Response:

The purpose of the oxygen demanding substance and precursor studies is to provide the information necessary to better understand relative responsibilities and the effectiveness and potential redirected impacts of different measures being considered to reduce impacts on the impairment. See also response to Comment # 9.12.

**Comment # 9.30**

Page 45, Para 3. The variability of the preliminary wasteload allocation to the Stockton RWCF should also recognize the efforts to address the geometry of the DWSC in addition to flow and temperature in the DWSC.

Response:

As described in the Draft Final Staff Report, the Regional Board will review allocations and implementation provisions based on the results of the oxygen demand and precursor studies and the prevailing dissolved oxygen conditions in the DWSC (which automatically includes consideration of efforts to address DWSC geometry in the meantime) by December 2009.

**Comment # 9.31**

Page 46, top. The current CBDA grant for upstream studies does not include study efforts at the Stockton RWCF as suggested by the RWQCB. It is unlikely that study plans can be formulated, the required peer review completed, and approval obtained from the CBDA to meet the February 2005 deadline recommended by the RWQCB.

Response:

The completeness of the study plans, and the need for further Regional Board action, will be evaluated after the plans are submitted. Peer-review of the submitted study plans is not specifically required, nor is approval from CBDA. A study plan that addresses the information needs of the TMDL can also be submitted and paid for directly by the responsible entity. (Peer-review, however, will likely be a requirement of the completed studies.) The terms of what constitutes an acceptable study can be discussed with Regional Board staff prior to February 2005 or will be laid out as part of the requirements of a Section 13267 letter after that date, as needed.

**Comment # 9.32**

Page 46, Last Para. Similar to the comment above the current CBDA grant for upstream studies does not include study efforts for stormwater discharges as suggested by the RWQCB. It is unlikely that study plans can be formulated, required peer review completed, and approval obtained from the CBDA to meet the February 2005 deadline recommended by the RWQCB.

Response:

See response to Comment # 9.31

**Comment # 9.33**

Page 48, Para 1. "Once adequate understanding of these linkages has been obtained, specific load allocations for algae and/or its precursors will be assigned to upstream sources by the CVRWQCB in a subsequent TMDL." Statements such as this throughout the BPA make it obvious that this plan is not to solve the DO problem in the DWSC but only to identify other potential regulatory actions that can be imposed. It is apparent from such statements that DO is an indicator, not a constituent to be subjected to a TMDL.

Response:

In the absence of voluntary actions to solve the impairment by those responsible the contributing factors, regulatory actions will be needed to actually solve the problem. See also response to Comment # 9.2

**Comment # 9.34**

Page 48, Para 4. The RWQCB is taking the position that those responsible for the original creation of the DWSC cannot be held responsible for the solution. Yet some of the clearest studies to date indicate that if the man-made DWSC was simulated to appear as the upstream San Joaquin River then no DO problem would exist. Yet, the RWQCB appears reluctant to hold those responsible for the DWSC to mitigate for the problem.

Response:

See response to Comment # 9.6.

**Comment # 9.35**

Page 48, Para 4. No reference is made to the California State Lands Commission (CSLC) that has jurisdiction for the land under the DWSC. The CSLC was created in 1938 to protect the

natural resources on public lands of the state including the land under all navigable rivers. The RWQCB should evaluate the jurisdiction of the CSLC and the responsibility of the USACE to mitigate for the DWSC.

Response:

Comment noted. Staff will ask commenter for clarification of what it sees as the role of the CSLC.

**Comment # 9.36**

Page 48, Para 5. Within the BPA the RWQCB appears to be limiting the USACE mitigation responsibility to actions identified as part of a Water Quality Certification under Section 401 the Clean Water Act. It appears that the RWQCB is reluctant to impose any responsibility against the USACE for actions prior to the adoption of the Clean Water Act. Such “grandfathering” of impacts does not appear to apply to upstream dischargers.

Response:

See response to Comment # 9.6.

**Comment # 9.37**

Page 50, Top. The BPA includes a recommendation that the SWRCB assign one-third of the responsibility through various water rights actions. It is unclear what justification exists to grandfather in the actions of the USACE while recommending broad-based water right actions against upstream diverters. How the one-third responsibility allocated to flow is to be defined or administered is unknown. As commented previously on Figure 4-3 the one third approach would require about 83.3 CFS to meet the flow obligation to increase the concentration from 5 mg/L to 6mg/L. Or is the alternative approach that as described on page 40 that water rights actions will be taken until such time as the DO objective is met irrespective of any other actions?

Response:

See responses to Comment # 9.6 regarding Regional Board authority over the DWSC geometry. The State Water Resources Control Board would need to consider how to allocate the one-third responsibility for reduced flow to those responsible for activities that reduce flow. See also the response to Comment # 9.19 regarding the inappropriate use of an average concentration statistic for determining compliance with the dissolved oxygen water quality objective.

**Comment # 9.38**

Page 51, Para 4. The statement is made that alternate mitigation measures may be needed if direct controls cannot successfully mitigate. Alternate mitigation should be allowed if direct controls are not reasonable or economically feasible. Any direct control can be successful if reasonableness or economic feasibility is disregarded.

Response:

The Regional Board will develop more detailed criteria for determining the acceptability of alternate implementation measures at the time those measures are proposed and considering the technical information available at that time. No further discussion of these criteria will be developed for the Draft Final Staff Report.



**Comment # 9.39**

Page 56, Para 3. In Consideration #3: Alternate Mitigation Measures the RWQCB has failed to discuss aeration of the DWSC as a method of meeting the DO objective. This is a significant oversight since considerable resources have been committed to evaluate the existing and future aeration potential.

Response:

The wording of the subject text does not exclude aeration as a possible alternate mitigation measure. The example of algae removal in this text was illustrative only. Regional Board staff recognizes that aeration has the potential to be a useful component in a comprehensive solution to the dissolved oxygen impairment.

**Comment # 9.40**

Page 65, Para 6. Alternative I calls for immediate implementation of upstream load allocations based upon the best existing science and alternate mitigation when direct control is not deemed to be successful. The RWQCB has not met its responsibility under Water Code Section 13141 of defining the cost on the agricultural community. In Alternative I the cost question is side-stepped by stating any costs would be “speculative”. Yet the cost to implement Alternative I by upstream dischargers would be very real and significant, not speculative. Nor does the RWQCB evaluate cost of alternate mitigation.

Response:

Indeed, the actual costs of implementing Alternative I would be very real and significant. The level of those costs, however, remains very speculative until the nature of the required source controls is better understood. Section 13141 does not require such speculation. Nonetheless, detailed costs estimates associated with a prohibition of discharge (a form of upstream load allocation) has been added to the Draft Final Staff Report, Section 5.5.

**Comment # 9.41**

Page 66, Para 2. Alternative II is to implement upstream load allocations in a phase approach based upon new studies and implementation of alternate mitigation measures. The CEQA evaluation only includes the cost of studies under Alternative II. On page 43 of the BPA it is stated that “As the sources or oxygen demanding substances and their linkages to the DO impairment are better understood, those sources linked to the DO impairment will be required to implement mitigation measures.” The RWQCB fails to recognize the cost to implement direct control measures or any alternate mitigation, such as an aeration device.

Response:

Additional analysis and discussion have been added that considers the costs of implementing load controls and alternate implementation to remove the dissolved oxygen impairment.

**Comment # 9.42**

Page 67, Para 1. Alternative III proposes to adopt the three-legged approach based upon the best available science along with alternate mitigation as necessary. The RWQCB has failed to meet its obligations under Water Code Section 13141 to identify the costs on the agricultural

community for implementing Alternative III. These costs would include those of direct control, loss of water supply under a SWRCB action, and costs of alternate mitigation measures.

Response:

See response to Comment # 9.41

**Comment # 9.43**

Page 68, Para 1. Alternative IV is similar to alternative III but proposes a phase approach using further studies such as those proposed under alternative II. The RWQCB has failed to meet its obligations under Water Code Section 13141 to identify the costs on the agricultural community for implementing Alternative IV. These costs would include those of direct control, loss of water supply under a SWRCB action, and costs of alternate mitigation measures.

Response:

See response to Comment # 9.41

**Comment # 9.44**

Page 68, Para 4. The BPA estimates the cost to operate, maintain, and monitor an aeration device to be on the order of \$200,000 per year. (Brown 2002). A more recent report by Jones and Stokes for the California Bay Delta Program, Evaluation of Aeration Technology for the Stockton Deep Water Ship Channel, January 2004, estimates a cost to be about \$1,250 per day for providing up to 2,500 pounds per day of oxygen. Extrapolating this in order to provide up to the desired 1 millions pounds of oxygen per year the costs would be \$500,000.

Response:

Further Regional Board staff and peer-review of this January 2004 report is needed before using it as the basis for a cost estimate in the TMDL. The Brown 2002 report, upon which the staff report estimate is based, is the most recent peer-reviewed report on the aeration in the DWSC.